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ABSTRACT

This study focused on one southern state's efforts to implement developmentally appropriate practices through a training program for elementary principals. The purposes of the study were to describe the extent to which developmentally appropriate practices were used in grades K-3 in four schools, and to describe the role of the principals in influencing the developmentally appropriate practices to the theory of transfer of training. Literature suggested that only moderate use of developmentally appropriate practices occurred in early elementary classrooms. The research design was a multiple case study. Data sources included observations, photographs, and structured interviews. Subjects included four principals who had attended an early childhood training between 1989-93 and who had been principals in their respective schools for at least 3 years. Data analysis was based on theory triangulation and was analyzed from three perspectives: the perspective of the training program and National Association for the Education of Young Children guidelines, the perspective of the participants, and the theoretical perspective of transfer of training. Results suggested: (1) that schools in this study were using developmentally appropriate practices to a moderate extent; (2) that use of these practices decreased after kindergarten; (3) that principals influenced the use of appropriate practices; (4) that a direct relationship existed between principal behaviors and the use of developmentally appropriate practices in the classroom; and (5) that teacher beliefs and attitudes played a role in the sustained use of these practices. (Contains 50 references and 8 tables.) (RJK)

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THE INFLUENCE OF PRINCIPALS ON THE INSTITUTIONALIZATION OF DEVELOPMENTALLY APPROPRIATE PRACTICES: A MULTIPLE CASE STUDY

By

Lillie Souders West, Ed. D.

Pennsylvania Educational Research Association Distinguished Paper Award
Presented at the American Educational Research Association
Seattle, WA
April 14, 2001

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Abstract: Literature suggested that only moderate use of developmentally appropriate practices occurred in early elementary classrooms even though principals and teachers supported the conceptual foundation. This study focused on the efforts of one Southern state to implement developmentally appropriate practices through a training program for elementary principals. The purposes of the study were to describe the extent to which developmentally appropriate practices were used in grades K-3 in four schools, to describe the role of the principals in influencing the use of these practices in grades K-3, and to relate the extent of institutionalization of developmentally appropriate practices to the theory of transfer of training.

The research design was a multiple case study. Data sources included observations and photographs of 55 classrooms and structured interviews with teachers and principals. Subjects of the study included four principals who had attended an early childhood training between 1989-1993 and who had been a principal in their school for at least 3 years. Data analysis was based on theory triangulation and was analyzed from three perspectives: the perspective of the training program and NAEYC guidelines, the perspective of the participants, and the theoretical perspective of transfer of training.

Results suggested (a) that schools in this study were using developmentally appropriate practices to a moderate extent, (b) that use of these practices decreased after kindergarten, (c) that principals influenced the use of appropriate practices, (d) that a direct relationship existed between principal behaviors and the use of developmentally appropriate practices in the classroom, and (e) that teacher beliefs and attitudes played a role in the sustained use of these practices.

Introduction

The School Executive Management Institute (SEMI), established through the Mississippi Education Reform Act of 1982, was designed to provide leadership and management training for administrators (assistant superintendents, program directors, coordinators, supervisors, principals, and assistant principals) in the state of Mississippi (School Executive Management Institute, 1992b). Establishing Developmental Concepts in the Primary Grades was written in 1989 through the SEMI office as a training model for administrators to assure that developmentally appropriate practices that were recommended for the state's kindergarten program would be maintained, as well as expanded into the first three grades (School Executive Management Institute, 1989). In 1992, the name of the training module was changed to Developmental Instructional Programs K-3 (DIP). However, the content of the training remained the same as that in the training of 1989 (School Executive Management Institute, 1989, 1992a). The name Developmental Instructional Programs K-3 (DIP) was used throughout this study to represent the training acquired by principals who participated in this training module between 1989-1993.

DIP was presented as a 25 hour, 5 day program with three goals: (a) to assist in the evaluation of existing programs, (b) to implement developmentally appropriate strategies, and (c) to explore alternative forms of assessment. Components of the training consisted of four general areas: (a) curriculum, (b) learning centers, (c) assessment, and (d) development of a practical plan for implementation. The first component, developing program curriculum, focused on the theory and knowledge base for developmentally appropriate practices as recommended by the National Association for the Education of Young Children (NAEYC) as defined by Bredekamp in 1987. Aspects of the curriculum that were promoted were integrated curriculum, hands-on activities, and child-centered experiences. Next, the participants explored the theory and methods for implementing learning centers in grades K-3. They discussed alternative methods of implementation, grouping techniques, scheduling, contracting, room arrangement, and barriers to implementing learning centers. The third component of the DIP module dealt with assessment strategies for K-3 children. Participants evaluated standardized tests and their appropriateness for K-3 evaluation and discussed alternative assessment strategies, such as observation techniques, diaries or journals, anecdotal records, behavior scales, and work samples. In the final phase of the training module, the participants wrote a plan of action for implementation of developmentally appropriate practices in their respective schools. As indicated on the plan of action sheet, most all goals would require a 3-5 year period to be met (School Executive Management Institute, 1992a).

The objective of the DIP training module was that the knowledge, skills, behaviors and attitudes learned in the training environment would be carried over or transferred to the workplace (School Executive Management Institute, 1992a). However, no follow-up evaluation was conducted by the Mississippi Department of Education to determine if developmentally appropriate practices had been maintained or expanded into the first three grades. Therefore, the first purpose of this case study was to describe the extent of institutionalization of developmentally appropriate practices in schools that included grades K-3 of four principals who had participated in the DIP training during 1989-1993. The second purpose was to describe the role of the principals in influencing the institutionalization of developmentally appropriate practices in their schools. The third purpose was to relate the extent of institutionalization of developmentally appropriate practices to the theory of transfer of training.

A review of literature on the implementation and institutionalization of developmentally appropriate practices revealed that these practices were being used to a limited extent in primary grades. Dunn and Kontos (1997) conducted a review of studies on developmentally appropriate practices to determine how prevalent developmentally appropriate practices were in early childhood programs. They reported that only 1/5 to 1/3 of the early childhood programs they studied over the past decade exemplified developmentally appropriate practices. Three studies revealed that developmentally appropriate practices were rarely used in kindergartens (Bryant, Clifford, & Peisner, 1991; Hatch & Freeman, 1988; Oakes & Caruso, 1990). Other researchers reported that only moderate implementation of developmentally appropriate practices had occurred in classrooms and schools they had studied (Gottlieb & Rasher, 1995; Sherman & Mueller, 1996). A synthesis of studies revealed that although many principals and teachers supported the use of developmentally appropriate practices, they did not implement them in actual practice (Butterfield & Johnston, 1995; Davis, 1993; Hatch & Freeman, 1988; Holmes & Morrison, 1994; Kieff, 1994). Several studies revealed that use of developmentally appropriate practices was prevalent in kindergarten, but decreased in use in the primary grades (Fuqua & Ross, 1989; Holmes & Morrison, 1994; Kieff, 1994).

Despite the difficulties in implementing developmentally appropriate practices in primary grades, studies revealed successful implementation to be the result of one or more change agents. In many cases, the principal became a key player in implementing change (Aagard, Coe, Moore, & Kannapel, 1994; Findley & Findley, 1992; Horsch, 1992; Leithwood, 1990; Leithwood, Begley, & Cousins, 1990; National Association of Elementary School Principals [NAESP], 1990a, 1990b; Williams, 1990). Other researchers, however, reported that principals were not able to significantly influence teacher use of new ideas or strategies (Kieff, 1994; Marsh, 1992).

The SEMI office of the Mississippi Department of Education introduced developmentally appropriate practices as a new program for administrators with the intent that knowledge, skills, behaviors and attitudes learned in the training environment would be carried over or transferred to the workplace (School Executive Management Institute, 1992a). Tallman and Holt (1987) indicated that transfer of training had occurred when "attitudes, knowledge, and behaviors that

had been presented in a nonwork setting were later utilized fully or in a modified manner in settings external to the program" (p. 15).

A synthesis of research indicated that several factors influenced the extent of transfer of training. The more similar the training was to the actual work conditions, the greater the likelihood that transfer would occur (Detterman, 1993; Joyce & Clift, 1984). Joyce and Clift (1984) noted that transfer of training was often inhibited because many teaching innovations required much adaptation, modification, and additional learning as teachers began the implementation of new skills. A second factor that influenced the extent of transfer of training was the design of the training program. Training programs which included the five components of presentation of theory, modeling or demonstration, practice in simulated conditions, structured feedback, and coaching increased transfer of knowledge, skills, and attitudes (Joyce, Hersh, & McKibbin, 1983; Joyce & Showers, 1988; Mohlman, 1982; Shuster, 1995). Other factors that influenced transfer of training were the attitudes, beliefs, and perceptions participants had toward the training and the training content. These attitudes, beliefs, and perceptions often hindered transfer unless they were congruent with those of the training (Butterfield & Johnson, 1995; Fuqua & Ross, 1989; Hatch & Freeman, 1988; McGrevin & Rusher, 1992; Oakes & Caruso, 1990; Rusher, McGrevin, & Lambiotti, 1992; Tallman & Holt, 1987). The implementation of developmentally appropriate practices often required an understanding of a new theory and a change in beliefs and teaching methodologies, making transfer difficult (Gestwicki, 1995; Passidomo, 1994; Shuster, 1995).

This review of the literature indicated that many studies conducted during the past decade reported limited use of developmentally appropriate practices. Research on the role of the principal in implementing new programs was inconclusive. A review of the literature also indicated that transfer of training was impeded by several factors.

Method

Research Design and Subjects

The research design was a case study with multiple cases. The case study consisted of four cases with cross case analyses and conclusions. Subjects for the case study were four principals who had participated in the DIP training during 1989-1993 and who had maintained

principalship in the same school for at least three years. Case study subjects were limited to those principals whose elementary schools included grades K-3. All were rural schools, located in three different regions of the state: two in the eastern region, one in the central region, and one in the western region. Three of the schools had K-3 enrollments of 241-271 students, while the fourth school had an enrollment of 447. One principal had participated in the DIP training in 1989, two in 1990, and one in 1991.

Data Collection Instruments

The case study design enabled the researcher to explore the factors that enhanced or inhibited the use and maintenance of developmentally appropriate practices holistically. Four forms of data collection were used — survey questionnaire, observations, interviews, and photographs.

A survey questionnaire, composed of both closed and open-ended questions, was designed to determine possible participants for case studies. The questionnaire identified (a) when the principal participated in the DIP training, (b) current position held, (c) total number of years experience as principal of the current school, (d) the organizational plan of the school, and (e) eight questions related to developmentally appropriate practices. The eight questions dealing with developmentally appropriate practices were based on the content of the DIP training manual (School Executive Management Institute, 1992a). Four trainers of the DIP training module reviewed the eight questions for content validity and indicated either in written or verbal form that the survey questions accurately reflected the training content.

The Early Primary Practices Observation Scale (EPPOS) (Far West Laboratories, 1994) was used by this researcher and trained graduate students to collect observation data in grades K-3 in the four schools of the case study phase to determine the current use of developmentally appropriate practices. The EPPOS consisted of 29 items representing four domains of developmentally appropriate practices — the learning environment, curriculum and materials, daily routine, and adult interaction and intervention with children. The EPPOS was measured on a 5-point Likert-type scale with 1, 3, and 5 being operationally defined. Reliability of the EPPOS was assessed four times by researchers at Far West Laboratories (1994) with the following results: (a) exact agreements, 62% and agreement within one point of the scale, 87%, (b) without

the first observation, exact agreement 68% and agreement within one point of the scale 93%. Cronbach's Alpha was also computed with an Alpha level of .97 for the first three times of measurement and .98 for the fourth measurement.

Following Patton's (1990) guidelines on interviews, the researcher conducted two structured, open-ended interviews with each of the four principals in the case study phase. These interviews were designed to reflect the perspective and influence principals had on the institutionalization of developmentally appropriate practices in their schools. Research observers conducted one structured open-ended interview with teachers of all K-3 classrooms they observed. Open-ended questions addressed the topics of current use of developmentally appropriate practices, principal's philosophy of developmentally appropriate practices, principal's support, and other factors which had influenced the use of developmentally appropriate practices. All interviews were taped and later transcribed verbatim.

Observers took four to five photographs of each classroom observed. Photographs were labeled by room and school. These photographs provided information related to the physical classroom environment and were compared to the ratings of learning environment as operationally defined on the EPPOS.

Research Procedures

The researcher obtained approval for the study from the Mississippi State University Institutional Review Board and from the Mississippi State Department of Education which provided names and addresses of all participants of the DIP training from 1989-1996. After four trainers of the DIP training module had reviewed the questions on the survey questionnaire for content validity, the survey questionnaire was field-tested by three principals who were not part of the study.

A cover letter and survey questionnaire, composed of both closed and open-ended questions, were mailed to162 principals and assistant principals who had participated in the DIP training between 1989-1996. Of the 76 survey questionnaires returned, 25 met criteria necessary for participation in the case study phase: (a) The principal completed training during 1989-1993, (b) maintained principalship for a minimum of 3 years in the same school building, and (c) administered in an elementary school with grades K-3. The percentage of K-3 classrooms

identified as using developmentally appropriate practices was computed based on principal responses to the eight questions related to developmentally appropriate practices. Purposeful sampling was used to select four principals for in-depth interviews and observations based on the following criteria: school location, K-3 enrollment, and reported percentage use of developmentally appropriate practices. Two principals who indicated frequent use of appropriate practices, 92% and 100%, and two principals who indicated less use, 64% and 66% were chosen as case study subjects. The researcher obtained permission to visit school sites from the central administration and building principal in the four schools selected for the case study.

This researcher, under the direction of an early childhood educator, trainer of the DIP module, and researcher in early childhood education, trained volunteer graduate students of a doctoral program to collect empirical data using observation and interview techniques. All graduate students had prior classroom teaching experience. The training consisted of two- two hour sessions to familiarize the researchers with the EPPOS. Practice in using the observation instrument consisted of scoring four vignettes for each of the four sections of the EPPOS and a video tape of a primary classroom. Inter-observer agreement for the video tape observations using Cronbach's Alpha (Berk, 1979) was .73 with 1.00 being the maximum level possible. Finally, the graduate students and researcher observed and rated a second grade classroom in a school which had not been selected for this study. Cronbach's Alpha level for the classroom observation was .91. Agreement of the majority of the items in the classroom observation was within one point of the scale.

The primary researcher and research assistants conducted observations in 55 classrooms on two different occasions, once at the end of August or early September and once in October or early November 1997. During the first observation of approximately one hour, one observer used the EPPOS to record the use of developmentally appropriate practices and took pictures of each classroom. During the second observation, only the EPPOS instrument was used. A total of 52 teachers were interviewed and were asked to describe (a) a typical class in reading, math, writing, and science; (b) teaching strategies used; (c) children's involvement in the learning process; (d) their philosophy of how children learn; (e) training they had in early childhood education; (f) their principal's philosophy of early childhood education; (g) factors that had influenced their use of

developmentally appropriate practices; (h) teacher education; and (i) teaching experience. All questions were asked of all teachers. Interviews were taped and later transcribed verbatim.

The primary researcher conducted two interviews with the four principals participating in the case study phase. The first interview, conducted prior to the start of school in late July and early August 1997, included questions related to experiences, behaviors, opinions, values, knowledge, and demographic information. Questions were asked about specific developmentally appropriate practices that were currently being used at that school and the principal's role in the implementation and institutionalization of those developmentally appropriate practices. Each interview lasted approximately one hour. The second interview was held during or after the second observation period in October or early November 1997 and was composed of questions which were specific to that school site. The second interview lasted approximately 20-25 minutes. Each interview was taped and later transcribed verbatim.

Data Analysis

Data analysis was based on theory triangulation (O'Brien, 1993), the analysis of data utilizing three perspectives or theories. The focus of theory triangulation was "to have one set of results enrich, expand upon, clarify, or illustrate the others" (O'Brien, 1993, p. 74). Theory triangulation, based on three perspectives, provided a holistic picture of the multiple realities of those in the study. In this study, data was analyzed first from the perspective of the DIP training program to determine the extent of use of developmentally appropriate practices in grades K-3. The same data was then reanalyzed from the participants' perspectives, and finally from the perspective of the theory of transfer of training. Theory triangulation relative to this study was conceptualized as an equilateral triangle as shown in Figure 1.

The analytical procedure consisted of three parts: data reduction, data display, and data presentation from a single data base three times (Miles & Huberman, 1994; O'Brien, 1993). During data reduction, information collected from observations, interviews, and photographs were coded. ATLAS/ti -Version 4.1 (Muhr, 1997) computer program was used to code and categorize interview data. This coded information was then categorized and placed in a data display matrix. The final step in the analysis was the presentation of the results in the form of narrative text.

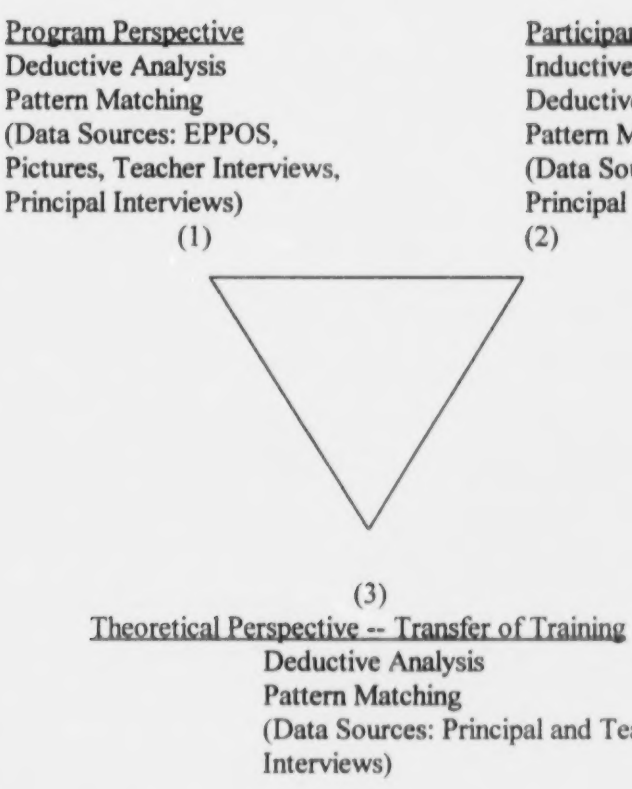

Figure 1. Data Analysis of Sources Based Upon Theory Triangulation

Program Perspective

To answer the first research question, to what extent had developmentally appropriate practices been institutionalized in schools that included grades K-3 of four principals who had participated in the DIP training during 1989-1993, data was analyzed on the theoretical propositions of developmentally appropriate practices as set forth in the DIP training manual (School Executive Management Institute, 1992a) and EPPOS instrument (Far West Laboratories, 1994). The EPPOS which included four domains of developmentally appropriate practices — learning environment, curriculum and materials, daily routine, and adult interaction and intervention with children — was measured on a 5-point Likert-type scale. Mean scores in the range of 1.0 to 2.9 represented low use of developmentally appropriate practices; mean scores in the range of 3.0 to 3.9 represented moderate use; and mean scores in the range of 4.0 to 5.0 represented high use of developmentally appropriate practices.

The mean score for each of the four domains of the EPPOS was calculated for each classroom for each of the two observations and for the combined observations in each of the four domains for each classroom. Means were also calculated for each grade level in each of the four domains. Finally, means were calculated for all grades K-3 in each of the four domains for each school.

Data analysis of teacher interviews followed deductive pattern matching as defined by Yin (1994). Empirical information regarding current use of developmentally appropriate practices was compared to predicted behaviors as established in the DIP training and EPPOS. Thirty-three codes emerged representing the four domains. Teacher interviews and classroom pictures were coded using this list of codes. High, medium, and low ratings were determined by comparing the descriptors associated with the EPPOS ratings of 1, 3, and 5 to the interview and picture data. A high (H) rating represented terms or phrases in the interviews or objects in the classroom pictures that directly related to descriptors found in an EPPOS rating of 5. A moderate (M) rating represented terms or phrases in the interviews or objects in the classroom pictures that directly related to descriptors found in an EPPOS rating of 3. A low (L) rating represented terms or phrases in the interviews or objects in the classroom pictures that directly related to descriptors found in an EPPOS rating of 1.

The following section provided a description of each of the four domains based on the descriptors on the EPPOS and from the DIP training manual.

Learning environment. The learning environment as defined by the EPPOS and DIP training manual included room organization, materials, storage, and classroom displays. Organization of a developmentally appropriate classroom included well-defined areas for large and small group instruction and centers for individualized or small group activities. Learning centers were designed to teach skills, concepts, facts, and processes, rather than as extension activities and typically provided for peer interaction and experiential learning. Materials in a developmentally appropriate classroom were grouped by function or type and were labeled with words and pictures, photographs, or real objects. A wide variety of materials, including manipulatives and concrete materials was available and accessible to children. Displays included

teacher-made and child-made materials, as well as commercially- made materials. Displays and labels were at the children's eye level.

Curriculum and materials. Curriculum and materials as defined by the EPPOS and DIP training manual included availability of raw materials and information sources, emergent literacy, and exposure to math and science through exploration, discovery, and problem solving. The DIP training emphasized an integrated curriculum which utilized units or themes of study with subject areas being taught as parts of a whole, rather than in isolated discrete time periods. Teachers accepted approximations of spelling, reading, and handwriting. Active student participation with concrete objects and learning through play and games was encouraged.

Daily routine. The daily routine provided for both adult-initiated and child-initiated activities in whole group, small group, and individual activities. Children actively participated in the planning and reflection of daily activities. The daily routine included strategies to inform children of the daily schedule and adults consistently referred to the schedule to help children prepare for the next activity or class.

Adult-child interaction and intervention with children. In a developmentally appropriate classroom, adults interacted with children in a respectful, positive, and encouraging manner. They engaged in give and take conversations and consistently spoke to children at their eye level. Adults encouraged and promoted interaction and cooperation among children, asked open-ended questions to extend student thinking, and encouraged children to explore alternative solutions to problem situations among themselves. Teachers used student errors as a way to understand the student's thinking and to guide students to alternative conclusions.

Participants' Perspective

Data from teacher and principal interviews, and principal self-reports yielded information relating to the three guiding research questions: (a) to what extent had developmentally appropriate practices been institutionalized in these schools, (b) how had the principal influenced the institutionalization of developmentally appropriate practices, and (c) what factors enhanced or inhibited the transfer of knowledge and skills regarding developmentally appropriate practices to use of these practices in grades K-3. To obtain this information, teacher and principal interviews and principal self-reports were reanalyzed from the perspective of the participants of the study.

Data analysis of teacher and principal interviews followed inductive and deductive pattern matching. A coding system which indicated general domains was developed inductively (Miles & Huberman, 1994). Using a start list of 15 general domains, the researcher coded teacher and principal interviews. As codes were modified as the analysis progressed, data were reanalyzed. Data were analyzed deductively based on the theoretical propositions of developmentally appropriate practices as set forth in the DIP training manual (School Executive Management Institute, 1992a) and EPPOS observation instrument. Eight categories defined by the DIP training manual included (a) an integrated curriculum; (b) units or theme lessons; (c) learning centers; (d) opportunity for students to construct knowledge through manipulative activities, game playing, observation, exploration, and verbalization; (d) play and social interaction; (e) student choice; (f) use of concrete materials and manipulatives; and (g) individual and small group instruction. Using a start list, teacher and principal interviews were coded for the first school site. The initial set of codes was then used to code data from the second site and were revised as needed to fit the data collected from that second site. The revised code was then used to recode data from the first site. The process of coding and revision was repeated for the third and fourth sites.

Theoretical Perspective — Transfer of Training

The researcher reanalyzed the data a third time to determine the extent of current use of developmentally appropriate practices and the principal's influence of this use as it related to the theory of transfer of training. Data analysis of teacher and principal interviews followed deductive pattern matching based on the theoretical propositions of transfer of training as defined in a current literature review. Predicted patterns of behavior were coded prior to analysis. This start list of descriptive codes was used to match empirical data with predicted behaviors. Codes were modified and data reanalyzed as needed.

Case Analyses

Single cases analyses were written for each school site upon completion of the analysis of the data set from the three perspectives: program perspective, participant perspective, and theoretical perspective of theory of transfer of training. Following single case analyses, a cross-case analysis was conducted to determine the similarities and differences in the four cases (Miles & Huberman, 1994). First, meta-matrices or master charts were created for each research

question. Using the categories from the individual case studies, descriptive data from each school site were placed on one large chart. Patterns and themes common to several or all schools were identified. A case narrative was written for each of the research questions.

Results and Discussion

School A Summary

School A was a rural elementary school of kindergarten through sixth grade in a western county of Mississippi. The total enrollment of the elementary school was approximately 360 students with an enrollment of 241 in kindergarten through third grade. The ethnic breakdown of the student population was 77% Caucasian, 21% African American, and 2% Hispanic. According to Principal A, the socioeconomic level of families in the attendance area ranged from low to high income with approximately 60% of the children receiving free lunches. Ten teachers participated in the first observation and interview: 2 kindergartens, 3 first grades, 3 second grades, and 2 third grades. Changes in enrollment necessitated the change of several classrooms after the first observation. During the second visit 3 kindergartens, 3 first grades, 2 second grades, and 3 third grades were observed. Eleven teacher interviews were conducted. The number of total years teaching experience in grades K-3 ranged from 2 to 30 years. Principal A had been in education for 33 years: 12 years as a teacher in elementary and middle school and 21 years in administration. The principal had been at School A for 10 years.

Principal A defined developmentally appropriate practices in School A as the use of manipulatives and learning centers. Following the DIP training, Principal A emphasized the use of these and small group activities. The principal indicated that discussions and training had occurred but that they had not "made a big deal about it." Teachers were initially positive about using developmentally appropriate practices, although state testing and the desire to raise test scores had taken the focus off using them. In addition, many of the people who were teaching during the implementation period were no longer at the school.

Overall, School A rated in the moderate range for kindergarten and third grade and low for first and second grade. Kindergarten and third grades exhibited more use of developmentally appropriate practices in the domains of learning environment, daily routine, and adult-child

interaction than first and second grades. All grades rated in the moderate range in the domain of curriculum and materials. Table 1 displays ratings for School A by domains and grade levels.

Table 1

Ratings for School A for Extent of Use of Developmentally Appropriate Practices

Grade	N	Learning Environment			Curriculum and Material			Daily Routine			Adult-Child Interaction		
		EM	ER	IE	EM	ER	IE	EM	ER	IE	EM	ER	IE
K	3	3.74	M	M	3.02	M	M	2.81	L	M	2.45	L	M
1	3	2.74	L	L	2.73	L	M	2.74	L	L	2.15	L	L
2	3	2.86	L	L	2.78	L	M	2.45	L	L	2.67	L	L
3	3	3.37	M	M	3.44	M	M	3.52	M	M	3.50	M	M
Grand Mean		3.16			2.97			2.87			2.68		

N represents the number of classrooms.
EM represents the EPPOS mean.
ER represents the EPPOS ratings of high (H) in the range of 4.0 to 5.0, moderate (M) in the range of 3.0 to 3.9, or low (L) in the range of 1.0 to 2.9.
IE represents the combined ratings using data collected through observations, interviews, and pictures of the classrooms.

According to the principal, the use of developmentally appropriate practices had decreased over the last 3 or 4 years. Kindergarten had institutionalized the use of learning centers using as many as 12 centers with both teacher-directed and free choice activities. The number of centers and use decreased in other grades. Two or three centers were used in a few first and second grades as enrichment centers; no centers were used in third grade.

Most teachers used textbooks as the primary teaching guide and focused on discrete skills. No teacher in any grade reported teaching with thematic units. Integrating content areas was limited to a few teachers in various grade levels. Although all grade levels provided opportunities for children to use manipulatives, most activities were teacher-directed and followed the guidelines of textbooks. Exploratory use with manipulatives was limited to a few teachers in kindergarten and third grade. Only one teacher, a third grade teacher had institutionalized the use

of manipulatives. All teachers provided whole class and small group instruction. Kindergarten and third grade teachers provided more opportunities for small group and self-selected activities. First and second grades emphasized whole class teacher-directed activities.

Factors that enhanced the sustained use of developmentally appropriate practices were availability of materials, opportunities for staff development, supportive environment, constructive feedback from the principal, teacher and principal beliefs which were congruent with the concepts of developmentally appropriate practices, peer and parent support, and teacher and student success as a result of using developmentally appropriate practices.

Inhibiting factors included emphasis on state testing and test scores, time, large class size, and principal and teacher behaviors. According to interview data, the principal did not maintain a focus on using these practices and did not hire personnel already trained in the use of learning centers and manipulatives. The final inhibiting factor related to teachers perceiving that they were using developmentally appropriate practices more often or more accurately than actual practice.

School B Summary

School B was a rural elementary school located in an eastern county of Mississippi. Principal B was responsible for prekindergarten through grade four. The total enrollment of the elementary school was approximately 550 students with an enrollment of 447 in kindergarten through third grade. The ethnic breakdown of the student population was 99% African American. According to Principal B, the socioeconomic level of families in the county area was low income. Approximately 99% of the children received free or reduced lunches. Twenty teachers participated in the observations and 19 participated in the interviews. Five classrooms of each grade level K-3 were part of the study. The number of total years teaching experience in grades K-3 ranged from 1 to 27 years. Principal B had been in education for 26 years: 13 years as a teacher in secondary education and 13 years as administrator (8 years in a middle school and 5 years in elementary schools). The principal had been an administrator at School B for 3 years.

Principal B defined developmentally appropriate practices as meeting the child's psychological, intellectual, and physical needs. The principal indicated that School B had been using some developmentally appropriate practices prior to her assuming the principal position. The initial attitude of the staff toward implementation of the principal's recommendations was one

of reluctance. The DIP training the principal attended in 1989 served as a guide for emphasizing the use of learning centers, trade books, cooperative learning, and multilevel activities. The principal perceived that teachers used an integrated approach, trade books, manipulatives, and a variety of teaching methods. Principal B reported improved teacher and student attitudes toward learning and increased use of writing across the curriculum.

Overall School B rated in the moderate range in each of the four domains. School B reflected more similarity than differences across grade levels. However, within grade levels differences were obvious. The use of developmentally appropriate practices ranged from low to high in nearly every grade level and in every domain. The composite rating for each grade level placed them in the moderate range in all domains except one. Third grade rated in the high range for adult-child interaction. Table 2 displayed ratings for School B by domains and grade levels.

Table 2

Ratings for School B for Extent of Use of Developmentally Appropriate Practices

Grade	N	Learning Environment			Curriculum and Material			Daily Routine			Adult-Child Interaction		
		EM	ER	IE	EM	ER	IE	EM	ER	IE	EM	ER	IE
K	5	3.57	M	M	2.85	L	M	3.08	M	M	3.20	M	M
1	5	3.41	M	M	2.73	L	M	3.48	M	M	3.43	M	M
2	5	3.54	M	M	3.06	M	M	3.50	M	M	3.04	M	M
3	5	3.21	M	M	3.13	M	M	3.78	M	M	4.09	H	H
Grand Mean		3.44			2.94			3.46			3.44		

N represents the number of classrooms.
EM represents the EPPOS mean.
ER represents the EPPOS ratings of high (H) in the range of 4.0 to 5.0, moderate (M) in the range of 3.0 to 3.9, or low (L) in the range of 1.0 to 2.9.
IE represents the combined ratings using data collected through observations, interviews, and pictures of the classrooms.

Six to nine learning centers were used in kindergarten. The number of centers decreased to two or three in most classrooms of grades 1, 2, and 3. The use of centers was similar in all grades with small groups of children rotating through teacher-directed centers at the teacher's command.

Methods of instruction were similar in grades 1, 2, and 3. No teacher in any grade discussed using thematic units. Integrating the content areas was observed in the opening exercises and calendar activities in all grade levels. Subjects were taught as discrete units in whole class or small group settings and were textbook-driven. Although all grade levels provided opportunities for children to use manipulatives, most activities were teacher-directed and followed the guidelines of textbooks. Exploratory use with manipulatives was limited to a few teachers in first and second grade. Third grade teachers provided more opportunities for student-student interaction than the other grades.

Principal attitudes and behavior indicated a commitment to continued growth. Many teachers were enthusiastic and expressed a desire to sustain the use of developmentally appropriate practices in their classrooms. Factors that enhanced the sustained use of these practices included on-going staff development, principal classroom visits and constructive feedback, availability of materials, supportive environment, and peer support. Two additional factors that enhanced the use of these practices were existing programs and beliefs and goals that were congruent with the concepts of developmentally appropriate practices. Inhibiting factors included state mandates and testing, lack of space, large class size, and time.

School C Summary

School C was an elementary school in an attendance center located in a central county of Mississippi. Principal C was responsible for prekindergarten through grade six. The total enrollment of the elementary school was approximately 460 students with an enrollment of 248 in kindergarten through third grade. Approximately 60% of the student population was Caucasian and 40% was African American. According to Principal C, the socioeconomic level of families in the attendance area was low income. Approximately 75% of the children received free or reduced lunches. Eleven teachers participated in the classroom observations: two kindergartens and three sections each of grades 1, 2, and 3. Ten teachers participated in the interviews. The number of total years teaching experience in grades K-3 ranged form 1 to 27. Principal C had been in

education for 29 years: 2 years as a secondary teacher, 16 years as an elementary teacher, and 11 years as an elementary principal. The principal had been the principal at School C for the past 11 years.

Following the DIP training in 1991, Principal C emphasized the use of learning centers and thematic units and defined developmentally appropriate practices as using these. The principal felt that teachers had built onto the original changes and had not regressed in any way. Principal C believed that developmentally appropriate practices were being used to a greater extent than in previous years. The principal perceived that most teachers used learning centers, thematic units, and encouraged student interaction and active involvement. In contrast to the principal's beliefs, many teachers relied on textbooks and used workbooks, worksheets, and other pencil-paper activities as the primary method of instruction.

Overall School C rated in the moderate range in three domains: learning environment, curriculum and materials, and daily routine. Two grades rated in the moderate range and two in the low range in adult-child interaction. Third grade exhibited less use of developmentally appropriate practices, scoring low in learning environment and adult-child interaction. Table 3 displays ratings for School C by domains and grade levels.

Learning centers were used in all grade levels and in most classrooms. However, the number of centers decreased from 12 in kindergarten to 1 or 2 in first, second, and third grades. Centers in first, second, and third grades were described as teacher-instructed lessons, adult-directed skill activities, boardwork and worksheets, listening centers, and computer skill programs. All children were required to complete all activities and to rotate to another station at the teacher's command. All classrooms in kindergarten and grades 1 and 2 had tables and several well-defined areas. However, two first grades had tables which were partitioned into cubicles.

Table 3
Ratings for School C for Extent of Use of Developmentally Appropriate Practices

Grade	N	Learning Environment			Curriculum and Material			Daily Routine			Adult-Child Interaction		
		EM	ER	IE	EM	ER	IE	EM	ER	IE	EM	ER	IE
K	2	4.04	H	M	3.03	M	M	3.31	M	M	3.14	M	M
1	3	3.36	M	M	2.38	L	M	2.00	L	M	2.52	L	M
2	3	2.81	L	M	2.40	L	M	2.00	L	M	2.50	L	L
3	3	2.14	L	L	2.21	L	M	1.90	L	M	2.21	L	L
Grand Mean		3.00			2.46			2.18			2.49		

N represents the number of classrooms.
EM represents the EPPOS mean.
ER represents the EPPOS ratings of high (H) in the range of 4.0 to 5.0, moderate (M) in the range of 3.0 to 3.9, or low (L) in the range of 1.0 to 2.9.
IE represents the combined ratings using data collected through observations, interviews, and pictures of the classrooms.

Several changes in the academic program had occurred in the past few years. The developmental kindergarten program had been moved down to the four-year-old prekindergarten and kindergarten had become more academic. The principal stated that first, second, and third grades were academically oriented to prepare for state testing. Thematic units were used in kindergarten. The kindergarten curriculum emphasized letter recognition, letters sounds, and number recognition. Thematic units had been set aside in first, second, and third grades with the adoption of a new reading series. Few subjects were integrated, but rather, were taught as discrete areas with specified time slots. Kindergarten and a few first grade teachers provided opportunities for children to use manipulatives in both an exploratory and teacher-directed manner. Use of manipulatives was limited in second and third grades to teacher-directed and textbook guidelines. All teachers of the same grade level were expected to teach to the same objective on the same day. Therefore, activities and methods of teaching were very similar in each grade level. All teachers provided for whole class, small groups, and individual instruction.

Factors that enhanced the sustained use of appropriate practices included support from central administration, on-going staff development, availability of materials, supportive environment, peer support, allowance for gradual change, teacher involvement in the change process, and hiring new teachers who were trained in using developmentally appropriate practices. Additional factors that enhanced the use of these practices were beliefs and goals that were congruent with the concepts of developmentally appropriate practices, joint grade level planning time, student experience with learning centers, and successful experiences when using appropriate practices. Inhibiting factors included state accreditation, state testing, emphasis on reading, lack of materials, and time.

School D Summary

School D was an elementary school in an attendance center located in an eastern county of Mississippi. Principal D was responsible for kindergarten through grade six. The total enrollment of the elementary school was approximately 500 students with an enrollment of 271 in kindergarten through third grade. Student population was approximately 88% Caucasian and 12% African American. According to Principal D, the socioeconomic level of families in the attendance area was low to middle income. Approximately 28% of the children received free or reduced lunches. Twelve teachers participated in classroom observations and interviews: 3 teachers each in kindergarten, first grade, second grade, and third grade. The number of total years teaching experience in grades K-3 ranged from 5-29 years. Principal D had been in education for 19 ½ years: 10 years teaching experience and 9 ½ years administrative experience. The principal had taught most grades K-12 in some capacity and had been a kindergarten teacher for 3 ½ years. Principal D had been a principal at School D for 7 ½ years.

Principal D defined developmentally appropriate practices as activities that were age appropriate and appropriate for the learning level. As a former kindergarten teacher, familiar with developmentally appropriate practices, the DIP training helped Principal D to focus more closely on research and to select techniques and strategies that had been proven successful and to incorporate research and developmentally appropriate strategies into staff development. Principal D emphasized the use of learning centers, grouping techniques, alternative reading strategies, hands-on activities, and teacher-student interaction.

Overall School D rated in the moderate range in three domains: curriculum and materials, daily routine, and adult-child interaction. Two grades rated in the high range and two in the moderate range in learning environment. Kindergarten exhibited more use of developmentally appropriate practices in the domains of learning environment, curriculum and materials, and adult-child interaction than the other grade levels. First grade also rated high in learning environment but moderate in all other domains. All grades rated in the moderate range in the domain of daily routine. Table 4 displays ratings for School D by domains and grade levels.

Table 4

Ratings for School D for Extent of Use of Developmentally Appropriate Practices

Grade	N	Learning Environment			Curriculum and Material			Daily Routine			Adult-Child Interaction		
		EM	ER	IE	EM	ER	IE	EM	ER	IE	EM	ER	IE
K	3	4.38	H	H	3.92	M	H	3.90	M	M	4.02	H	H
1	3	4.12	H	H	3.25	M	M	3.21	M	M	3.62	M	M
2	3	3.81	M	M	3.65	M	M	3.30	M	M	3.86	M	M
3	3	3.17	M	M	3.12	M	M	3.24	M	M	3.07	M	M
Grand Mean		3.87			3.48			3.42			3.64		

N represents the number of classrooms.
EM represents the EPPOS mean.
ER represents the EPPOS ratings of high (H) in the range of 4.0 to 5.0, moderate (M) in the range of 3.0 to 3.9, or low (L) in the range of 1.0 to 2.9.
IE represents the combined ratings using data collected through observations, interviews, and pictures of the classrooms.

All grades used learning centers. Kindergarten provided free choice and teacher-selected centers and used centers as the primary method of instruction. The number and use of centers decreased with each succeeding grade. First grade offered six or more centers with a variety of activities from which students could choose. Two or three centers were used in second grade and no centers were used in two of the three third grades.

Although Principal D indicated that teachers were not textbound and used thematic units, kindergarten was the only grade to use a totally integrated or whole language approach to teaching. Other grades integrated reading and writing across the curriculum and math skills with the morning opening exercises. Most teachers in grades 1, 2, and 3 used textbooks as the primary teaching guide for all subjects. Kindergarten teachers encouraged learning through play, games, songs, hands-on activities, peer interaction, and exploratory use of manipulatives. First, second, and third grade teachers followed the guidelines of a math textbook and used math manipulatives as suggested; some exploratory use occurred.

Kindergarten and first grade teachers provided whole class, small group, individual, and center instruction. Second and third grade teachers relied on whole class instruction most of the time with some opportunities for small group work. Activities were teacher-selected and teacher-directed in most classrooms.

Principal attitude and behaviors indicated a commitment to continued growth. Factors that enhanced the sustained use of developmentally appropriate practices included support from central administration, on-gong staff development, a supportive climate, research literature and information, adequate materials and supplies, constructive feedback, recognition for efforts and successful practices, and successful experiences with appropriate practices. In addition, several existing programs, district thematic units, the curriculum frameworks from the state department, and the state testing format promoted the use of appropriate practices. Teachers mentioned the following as enabling them to sustain the use of appropriate practices: smaller class size, peer and parent support, positive reactions from children, joint planning time, and teacher assistants. Factors that inhibited the sustained use of developmentally appropriate practices were insufficient materials in the third grade, availability of computer programs to match computers, lack of funds, time, and large class sizes.

Cross Case Analysis Narrative

Extent of Use of Developmentally Appropriate Practices

Table 5 represents the ratings of the extent of use of developmentally appropriate practices by school, domain, and grade level. These ratings were determined by comparing the descriptors associated with the EPPOS ratings of 1, 3, and 5 to the interview and picture data.

Table 5

Cross Analysis Ratings by School for Extent of Use of Developmentally Appropriate Practices Across Domains and Grade Levels

Domains by Grade Level	School A			School B			School C			School D		
	H	M	L	H	M	L	H	M	L	H	M	L
Environment												
K		X			X			X		X		
1			X		X			X		X		
2			X		X			X			X	
3		X			X				X		X	
Curriculum												
K		X			X			X		X		
1		X			X			X			X	
2		X			X			X			X	
3		X			X			X			X	
Daily Routine												
K		X			X			X			X	
1			X		X			X			X	
2			X		X			X			X	
3		X			X			X			X	
Adult-Child Interaction												
K		X			X			X		X		
1			X		X			X			X	
2			X		X				X		X	
3		X		X					X		X	

H represents high rating.
M represents moderate rating.
L represents low rating.

School D exhibited a higher use of developmentally appropriate practices with kindergarten rating high in three domains and first grade rating high in one domain. School B was the only other school that demonstrated high use of developmentally appropriate practices in any domain and this was limited to third grade in one domain. School A exhibited a lower use of developmentally appropriate practices with first and second grades rating low in three domains. No school exhibited all three ratings. Schools had either high and moderate ratings or moderate and low ratings. Seventy-eight percent of the ratings of all four schools fell in the moderate range. Schools A and D had the most ratings in the low and high categories respectively and became the primary focus for analysis and discussion.

Table 6 represents a distribution of the number of high, moderate, and low ratings by domain. The domains of curriculum and daily routine showed less variation in ratings than did the domains of environment or adult-child interaction.

Table 6

Total Number of High, Moderate, and Low Ratings for Extent of Use of Developmentally Appropriate Practices by Domains Across All Schools

Domain	High	Moderate	Low
Environment	2	11	3
Curriculum	1	15	0
Daily Routine	0	14	2
Adult-Child Interaction	2	10	4

Learning environment. The domain of learning environment included ratings of high, moderate, and low. Two high ratings were represented in kindergarten and first grade in School D. Three low ratings were represented in first and second grades in School A and third grade in School C.

The learning environment as defined by the EPPOS and DIP training manual included room organization, materials, storage, and classroom displays. Although learning centers were not the only factors considered in the rating of learning environment, they were a key component of

the DIP training. The number of centers in kindergarten was fairly consistent with as many as nine centers. Kindergartens in School A had 9 to 12 centers; School B, 6 to 9 centers; and School D, 9 centers that were set up on a permanent basis with materials accessible and available. School C had up to 12 centers but placed material on tables each day for center activities. Only four kindergarten classrooms used pictures and words to label material and centers. The remaining classrooms labeled with words only or had no labels. The number of learning centers decreased in grades 1, 2, and 3. The number of centers in first grade ranged from zero to six with most classrooms having 2 or 3. Most first grades in School D had 6 labeled centers while most first grades in Schools A, B, and C had 2 or 3 centers. The number of centers in second and third grade in all schools ranged from 0 to 3. No classroom in School A had defined activity areas. School C and several classrooms in School B and D had areas such as a listening center and computer center.

Room organization varied across grade levels and schools. In all schools, kindergarten had defined rugs for whole class instruction and activity areas which were sectioned off with low shelves or defined with tables or wall space. Tables were used in all kindergartens of all schools, in first and second grades of Schools B and C, and third grade in School B. Tables in two of the three first grade classrooms in School C had partitions which created individual cubicles. Individual desks were used in grades 1, 2, and 3 in Schools A and D, and third grade of School C. Although the first grade rooms in School D had rows of individual student desks, each room had well-defined activity areas around the edge of the room.

An adequate supply of materials was available and accessible or was made available for students in most classrooms in all four schools. Students work was displayed in most classrooms. All kindergarten classrooms displayed commercially-made student work while Schools C and D displayed student-created work as well. A limited amount of student work was displayed in first grade in School A, some in School C, and in all classrooms of Schools B and D. Student work was displayed in 12 of the 14 second grade and 11 of the 14 third grade classrooms.

Curriculum and materials. Of the 16 ratings in the domain of curriculum and materials, 15 were in the moderate range. Kindergarten in School D was the only exception with a high rating

in this domain. Key factors in the rating of curriculum and material were use of thematic units or integrated curriculum and learning through exploration, games, and manipulatives.

The use of thematic units was limited to kindergarten in School C and kindergarten and first grade in School D. All kindergartens in School D offered a totally integrated approach with thematic units that incorporated math, science, and social studies. School C also used thematic units but had changed the focus to a more academic emphasis incorporating the unit theme with the letters and numbers of the week. Teachers in Schools A and B did not mention thematic units or integrating subjects. Most subjects were taught as discrete units in whole class and small group settings. Most teachers in School A followed the guidelines of a basal reader for reading instruction and emphasized skills and phonics. Teachers in School B used trade books to teach concepts in small group or center activities.

The curriculum in first, second and third grades was more similar than different. Subjects in all schools were taught during discrete time blocks and most activities were teacher-selected and teacher directed. Teachers did not mention teaching with thematic units in any school and integrating subject matter was limited if it occurred. All schools devoted the entire morning to reading, language, spelling, and writing. Nearly all teachers relied on the basal as the primary reading tool but supplemented the basal reading program with other activities and with phonics skill lessons. First grade teachers in School D supplemented the reading program with thematic units and integrated reading and writing across all subject areas. Second grade teachers in School B integrated science and social studies with reading in a limited manner. Teachers in Schools B and D integrated language skills, problem solving, and math with the opening exercises. Two of the three third grade teachers in School A used trade books, selected stories from the basal reader, cooperative learning groups, and partner reading. These reading activities and instruction represented moderate use of developmentally appropriate practices.

All teachers in all schools provides opportunities for writing, most of which fell in the moderate range of developmentally appropriate practices. Approximately one half of all kindergarten teachers provided opportunities for meaningful and exploratory writing experiences and one half emphasized correct letter formation. First and second grade teachers emphasized correct letter formation and grammar. Copying passages from the board was a typical writing

in this domain. Key factors in the rating of curriculum and material were use of thematic units or integrated curriculum and learning through exploration, games, and manipulatives.

The use of thematic units was limited to kindergarten in School C and kindergarten and first grade in School D. All kindergartens in School D offered a totally integrated approach with thematic units that incorporated math, science, and social studies. School C also used thematic units but had changed the focus to a more academic emphasis incorporating the unit theme with the letters and numbers of the week. Teachers in Schools A and B did not mention thematic units or integrating subjects. Most subjects were taught as discrete units in whole class and small group settings. Most teachers in School A followed the guidelines of a basal reader for reading instruction and emphasized skills and phonics. Teachers in School B used trade books to teach concepts in small group or center activities.

The curriculum in first, second and third grades was more similar than different. Subjects in all schools were taught during discrete time blocks and most activities were teacher-selected and teacher directed. Teachers did not mention teaching with thematic units in any school and integrating subject matter was limited if it occurred. All schools devoted the entire morning to reading, language, spelling, and writing. Nearly all teachers relied on the basal as the primary reading tool but supplemented the basal reading program with other activities and with phonics skill lessons. First grade teachers in School D supplemented the reading program with thematic units and integrated reading and writing across all subject areas. Second grade teachers in School B integrated science and social studies with reading in a limited manner. Teachers in Schools B and D integrated language skills, problem solving, and math with the opening exercises. Two of the three third grade teachers in School A used trade books, selected stories from the basal reader, cooperative learning groups, and partner reading. These reading activities and instruction represented moderate use of developmentally appropriate practices.

All teachers in all schools provides opportunities for writing, most of which fell in the moderate range of developmentally appropriate practices. Approximately one half of all kindergarten teachers provided opportunities for meaningful and exploratory writing experiences and one half emphasized correct letter formation. First and second grade teachers emphasized correct letter formation and grammar. Copying passages from the board was a typical writing

activity in Schools A and C. Teachers in all schools provided some opportunities for creative writing with teacher-selected topics or guidelines from the basal reader. Second grade teachers in School B provided opportunities for free journal writing and drawing and writing about a picture. All third grade teachers provided for creative writing and some teachers in Schools A, B, and D followed the writing process. Third grade teachers in Schools A and B demonstrated high use of developmentally appropriate practices with writing activities such as journals, self-selected reports, learning logs, teacher-selected topics, and book making. Most teachers in all schools accepted invented spelling for creative writing.

Math instruction was similar in all schools with the majority of teachers demonstrating moderate use of developmentally appropriate practices. All teachers followed the guidelines of a math textbook and used manipulatives and worksheets. Most activities with manipulatives were teacher-directed or followed the guidelines of the text; opportunities for exploration with manipulatives was limited. Kindergarten teachers in School D, three first grade teachers in School B and one teacher each from Schools A and C provided activities in which students used manipulatives in an exploratory manner. Manipulatives were rarely used in School C.

Teachers demonstrated moderate use of developmentally appropriate practices with science instruction. Science, if taught at all, was most often taught as a discrete subject with teacher-directed whole class lessons. Science was integrated with reading in School A if a topic arose in a reading story. The majority of second and third grade teachers relied on a textbook as the primary tool. Discussions, teacher demonstrations, and a few hands-on activities were common features of the science programs. First grade teachers in School D included some science activities and many books with their centers. Only two first grade teachers, one in School C and one in School D, three of the fourteen second grade teachers, and two third grade teachers from School D mentioned doing hands-on science activities with the students. Two teachers in School A encouraged self-selected research, reports, and teacher-directed hands-on activities.

All grades in all schools provided opportunities for children to learn through manipulatives, games, and hands-on activities in math, some in science, and in independent or center activities but to varying degrees. Most activities with manipulatives were teacher-directed

and followed the guidelines of a text or kit. All kindergartens offered opportunities for exploration. Exploratory use of manipulatives was sporadic throughout all other grade levels.

Daily routine. Fourteen of the sixteen ratings in the domain of daily routine were in the moderate range. Grades 1 and 2 in School A had low ratings. A key factor in the rating of daily routine was the provision of whole class, small group, and individual instruction. All teachers in all schools provided opportunities for all three of these types of instruction.

Kindergarten teachers in Schools C and D provided more center time than whole class instruction. Teachers in School D provided center instruction two times a day and in School C seventy-five percent of teacher instruction occurred in the morning with small group or center activities. Children were free to complete both free choice and required centers in any order they chose. Teachers in School B used center activities four days a week in the morning and whole class review on Friday. Most instruction was teacher-selected and teacher-directed. Center time varied from classroom to classroom in School A in time allocation and in the degree of student choice.

All first grade teachers in Schools B, C, D, and one teacher in School A provided for whole class, small group, and individual instruction. Two of the three teachers in School A used whole class teacher-directed instruction the majority of the time. Most lessons in all schools were teacher-selected, teacher-planned, and teacher-directed. Schools B and C conducted reading classes with whole class introduction one day, small group center rotation/instruction three days, and whole class assessment the fifth day. Children in School B were grouped by ability. In Schools B, C, and D, independent work and centers included spelling, boardwork and worksheets, computer math, listening, and folder games. Math and science were predominantly whole class instruction.

Second grade teachers in Schools A, C, and D emphasized and used whole class instruction most of the time. Teachers in School B appeared to use an equal amount of whole class and small group instruction. Reading instruction in Schools B and C was similar to that in first grade with whole class instruction followed with small group instruction and finally assessment. Two teachers in School A and D instructed reading as whole class most of the time while the other two used small group instruction. Math instruction was primarily whole class in

School A, C and D. Teachers in School B and two teachers in Schools A and C used small group instruction or partner activities. Science, if taught, was primarily whole class instruction.

All third grade teachers provided for whole class, small group, and individual instruction. Two teachers in School A and three in School B emphasized small group work, often with cooperative learning, partners, peer tutoring, or other student-led groups. Schools B and C were similar in that they both followed the same teaching methods for reading as first and second grades with whole class and small group or center work three or four days a week. Teachers in School D conducted whole class reading most of the time. The predominant method of math and science instruction was with the whole class. However, teachers in Schools A, B, and C presented some math in small group settings as well.

Most lessons and activities were teacher-selected, teacher-planned, and teacher-directed. Opportunities for child-initiated activities and free choice occurred most frequently in the kindergartens of School C and kindergarten and first grade of School D. Student choice in grades 1, 2, and 3 was often limited to choice of writing topics, research topics, or enrichment activities when all assigned work was completed in all schools. Third grade teachers in Schools A and B provided opportunities for student initiated projects and reports.

Adult-child interaction and intervention. The domain of adult-child interaction included ratings of high, moderate, and low. Ten of the sixteen ratings were in the moderate range. High ratings were noted in kindergarten in School D and third grade in School B. These teachers tended to engage in natural conversations at the child's eye level most of the time and used nonevaluative language to recognize student effort and to reinforce internal motivation. They explored students' thinking when students made an error and encouraged students to explore alternative solutions for inappropriate behavior, to solve problems, and to collaborate with peers. Low ratings were noted in first and second grades in School A and second and third grade in School C. These teachers tended to dominate interactions, to be directive, and to solve problems for children. These teachers did not encourage interaction or collaboration and relied on punishments to control behavior. Positive adult-child interactions and encouragement for student-student interaction occurred frequently in kindergarten in all schools and in third grade in two

schools. Third grade teachers in Schools A and B provided opportunities for cooperative learning, student-generated activities, and problem solving.

Principal Influence on Use of Developmentally Appropriate Practices

Teacher and principal interviews supplied data to answer the second research question regarding how the principal influenced the institutionalization of developmentally appropriate practices in grades K-3. The review of research revealed that principals had the ability to influence what happened in the classroom through beliefs, attitudes, and behavior. These influenced the relationship between teachers and principals and how they worked together (McGrevin & Rusher, 1992). The principals' perception of the role of a principal, principal beliefs, and principal behaviors and the perception teachers had of these were areas investigated to determine principal influence on the institutionalization of developmentally appropriate practices.

The principals expressed similar perceptions regarding the principal's role, philosophy of how children learn, and expectation of teachers. Principals perceived their roles as a facilitator, instructional leader, or change agent. Three principals described their role to be a liaison between the superintendent and staff and to follow through with the mandates passed on to them. Principal D had a different perspective on the role of the principal — that of a change agent whose duty was to encourage teachers to try new things.

All principals believed that children learned in different ways, at different rates, and through different modalities. In addition, Principals A, B, and D emphasized the importance of peer interaction and small group work. All principals expected teachers to provide opportunities for students to be actively involved in the learning process. They expected to see a variety of teaching strategies, hands-on activities, learning centers, small groups of children working together, and tolerance for appropriate noise. Principal philosophies and expectations were congruent with the basic concepts of developmentally appropriate practices.

Each principal, regardless of the perception of their role, implemented developmentally appropriate practices in their school. Although all schools rated in the moderate range based on the EPPOS and DIP training module criteria, the extent of use of developmentally appropriate practices did vary from school to school. Each principal focused on a particular aspect of the DIP training and emphasized that aspect in their school. Principal A defined developmentally

appropriate practices as the use of manipulatives and learning centers and during the implementation phase provided training and materials in use of these. The principal stated that teachers were not using them as often as they had initially. Principals B and C emphasized the use of learning centers and thematic units. Both expected to see students rotating through centers three or four days a week. Teacher use of center activities in both schools was primarily teacher-selected pencil and paper skill lessons which did not meet the guidelines of center use as defined in the DIP training manual. Although thematic units had been written and used in School C during the implementation period, they were not being used at the time of this study. Thematic units were not mentioned by any teacher in School B. Principal D focused on the importance of research in assessing strategies and techniques and provided opportunities for the staff to read and use research to evaluate current and anticipated practices.

Principal behaviors and techniques they used to implement and maintain the use of developmentally appropriate practices were similar and fell into four categories: (a) materials and resources, (b) acquisition of knowledge and skills, (c) psychological support, and (d) management techniques. Table 7 displayed techniques principals used to implement and maintain the use of developmentally appropriate practices. A comparison of Table 7 to Table 5 shows a direct relationship between the number of techniques used by principals to influence the use of developmentally appropriate practices and the actual use of these practices in the classroom. The principal of School D used the most techniques and School D exhibited the greatest use of developmentally appropriate practices. Principal D who considered herself to be a change agent used many techniques to keep teachers focused. The principal of School A used the fewest number of techniques and School A exhibited the lowest use of these practices.

All principals obtained funds through central administration, PTAs, or grants and provided an adequate supply of materials. Principal C emphasized the importance of quality personnel as a resource and hired teachers who were already trained and prepared to teach with centers and units as a way to maintain and enhance the use of these practices.

Table 7

Techniques Used by Principals to Influence the Use of Developmentally Appropriate Practices

Techniques	Principal A	Principal B	Principal C	Principal D
Materials and Resources				
Provides resources and materials	X	X	X	X
Obtains funding	X	X	X	X
Hires qualified personnel			X	
Acquisition of Knowledge and Skills				
Principal acquires a knowledge base			X	X
Provides staff development	X	X	X	X
Visits to other schools		X	X	X
Presents topics at faculty meetings	X	X	X	X
Presents topics at grade level meetings	X	X		X
Uses teachers as presenters	X	X	X	X
Uses teachers as resource persons	X	X	X	
Assigns mentors		X		
Provides for in-house classroom visits		X	X	X
Provides for peer sharing				X
Models or provides models		X		
Holds individual conferences	X	X	X	X
Disseminates research and articles		X		X
Psychological Support				
Provides collegial atmosphere		X	X	X
Encourages risk taking	X	X	X	X
Allows for gradual change		X	X	X
Provides opportunities for peer support and interaction		X		X

Table 7continued

Recognizes and celebrates trials and successes		X		X
Principal Management Techniques				
Communicates a clear vision	X	X	X	X
Creates and follows an action plan			X	X
Involves teachers in decision making			X	X
Provides feedback	X	X		X
Visits classrooms	X	X		X
Conducts follow-up visits		X		X
Provides for joint planning		X	X	X
Holds informal conversations	X	X	X	X
Assigns teacher groups				X
Communicates vision to parents	X		X	
Compares personal beliefs and concepts to developmentally appropriate practices				X
Encourages use of district written thematic units			X	X

The area of acquisition of knowledge and skills applied to both principals and teachers. Many of these behaviors were common to three or four of the principals. All principals provided opportunities for teachers to attend staff development sessions in and out of the district, provided discussions and trainings in their schools through faculty meetings, grade level meetings, and individual conferences, and used teachers within their schools to present workshops. Three principals used teachers as a resource person for other staff members and three provided release time for teachers to visit classrooms within the school. Principals C and D reported that they had attended conferences and along with some of their staff visited other schools to observe teachers using learning centers, manipulatives, and thematic units. Teachers in all schools confirmed that these practices had enabled them to implement similar practices in their own classrooms.

Two principals used techniques unique to their own school. Principal B assigned mentors to new teachers or to teachers who had difficulty using centers or manipulatives and provided release time for the teacher to spend a day with the mentor. In addition, the mentor provided assistance throughout the year. Principal D provided opportunities for teachers to share activities, strategies, and materials with their peers. This validated teacher practices, improved collegial support, and provided additional knowledge for the staff. Both Principal B and D disseminated research articles. However, using research to assess programs, strategies, and techniques to validate current practices and to select strategies that would enhance student achievement was a personal goal of Principal D.

The major difference in principal strategies to provide knowledge and skills was the continued emphasis on developmentally appropriate practices. Principals B, C, and D provided on-going workshops and staff development and encouraged teachers to attend early childhood conferences. Principal A stated that the focus in the school had changed from developmentally appropriate practices to raising test scores.

All principals provided psychological support by providing an atmosphere in which teachers would be willing to take risks and try developmentally appropriate practices. Teachers in all schools felt that their principals were very supportive and allowed them the freedom to try new things and to make decisions for their own classrooms. Teachers in every school, especially in Schools B and D, mentioned the principal as being a major contributing factor in the use of appropriate practices. Teachers in Schools B, C, and D reported that the relationship that they shared with the principal and their peers enabled them to seek advice and suggestions and to try new things. Their principals guided and encouraged them and gave them time to develop their skills. In many cases, the success of teachers who implemented the practices encouraged others.

Principals B and D provided psychological support in two other ways. Both Principal B and D recognized and celebrated attempts teachers made and successes they had. Both principals asked teachers to share successful techniques at staff meetings or sharing sessions and suggested that teachers visit others who were experiencing success.

Management techniques used by at least three principals included communicating a clear vision, visiting classrooms and providing feedback, and providing joint planning time. All

principals communicated a clear vision of their philosophies and expectations. When asked to describe their principal's philosophy of how children learn, at least half of the teachers in Schools A, B, and C reflected views similar to that of the principal. Three fourths of the teachers in School D described their principal's views the same way she did. Classroom visits and feedback enhanced the use of developmentally appropriate practices in Schools A, B, and D. Teachers in School B indicated that the principal visited weekly, offered encouragement, suggestions, and support, and conducted follow-up visits to see that practices had been implemented. Joint planning time enabled teachers to share ideas and activities, to plan lessons, and to prepare centers. Principal B provided an agenda to be followed once a week and expected to receive minutes from the meeting. Joint planning time enabled teachers in School C to teach to the same objective each day as was expected of them. Kindergarten teachers in School D used this time to plan thematic units and prepare centers.

Two principals, C and D, involved teachers in making decisions concerning practices that would be implemented in their schools. Principal C felt that the teachers were more willing to try new things if they were part of the process. Principal D allowed teachers to select appropriate techniques and strategies to promote school goals based on research findings.

Two principals involved parents during the implementation phase. Principal A used money obtained from a grant for parent training sessions. Principal C held several open houses to share information with parents and to get their input. Both felt that this had enhanced the implementation of developmentally appropriate practices.

Principal D used two additional management techniques to focus teachers' attention on developmentally appropriate practices. She consciously selected developmentally appropriate practices that matched school goals and discussed these at faculty, grade level, and staff development meetings. She and the teachers compared their beliefs and research findings to these practices and selected the strategies that would enable them to reach their goals. Another technique Principal D used was to place teachers who were reluctant to try new strategies with successful teachers during staff meetings.

Two districts had rewritten the curriculum in the form of thematic units. Principals C and D encouraged teachers to use these units. However, teachers in School C reported that they were

currently not being using because they did not match the new reading series. Only kindergarten and first grade used thematic units in School D.

Transfer of Training

Teacher and principal interviews were used to answer the third research question regarding the factors that enhanced or inhibited the transfer of developmentally appropriate practices in grades K-3. The review of research indicated that transfer of training was inhibited or enhanced by factors such as a change agent, often the principal; characteristics of the change; staff development; school environment; beliefs; attitudes; education and experience; goals; perceived needs; and external factors. According to Fullan (1991), the principal had the ability to shape the organization for successful change. Actions of the principal that served to validate the change included attending trainings, gaining knowledge and understanding of the new program, and providing psychological support and necessary resources. Teacher beliefs, personalities, and relationships also influenced change. These factors were reflected in this study.

Transfer of training and skills had occurred when the following were evident: (a) Learning centers with well-defined objectives and a variety of tasks were used to teach skills, concepts, or facts; (b) thematic units or an integrated curriculum were emphasized over discrete content matter; (c) children were provided opportunities to construct knowledge through manipulative activities, game playing, exploration, and verbalization; (d) children were encouraged to interact with peers; (e) children were given the opportunity to choose activities and materials; and (f) children were instructed individually and in small groups.

All schools had implemented these practices to a moderate extent. Techniques principals used to implement and institutionalize the use of developmentally appropriate practices were analyzed and categorized into four areas: (a) materials and resources, (b) acquisition of knowledge and skills, (c) psychological support, and (d) management techniques. Table 8 delineated techniques used by principals to influence the use of developmentally appropriate practices into two categories. The first category represented those techniques identified in the implementation phase and the second category represented techniques associated with the institutionalization phase.

Table 8
Techniques Used by Principals to Institutionalize the Use of Developmentally Appropriate Practices

Techniques	Principal A		Principal B		Principal C		Principal D	
	I	N	I	N	I	N	I	N
Materials and Resources								
Provides resources and materials	X	X	X	X	X	X	X	X
Obtains funding	X	X	X	X	X	X	X	X
Hires qualified personnel					X	X		
Acquisition of Knowledge and Skills								
Principal acquires a knowledge base	X		X		X		X	X
Provides staff development on developmentally appropriate practices	X	X	X	X	X	X	X	X
Visits to other schools			X		X		X	
Maintains focus on developmentally appropriate topics at meetings	X		X	X	X	X	X	X
Uses teachers as presenters	X		X	X	X	X	X	X
Uses teachers as resource persons	X		X		X			
Assigns mentors			X	X				
Provides for in-house classroom visits			X	X	X		X	X
Models or provides models			X	X				
Disseminates research and articles	X			X			X	X
Psychological Support								
Provides collegial atmosphere				X		X		X
Provides a supportive climate	X	X	X	X	X	X	X	X
Allows for gradual change			X	X	X	X	X	X
Provides opportunities for peer support and interaction			X	X			X	X

Table 8 continued

Recognizes and celebrates trials and successes			X	X			X	X
Principal Management Techniques								
Creates and follows an action plan					X	X	X	X
Involves teachers in decision making					X	X		X
Provides feedback	X	X	X	X			X	X
Visits classrooms	X	X	X	X			X	X
Provides for joint planning				X		X		X
Communicates vision to parents	X				X			
Holds teachers accountable				X				

I represents implementation phase.
N represents institutionalization phase.
An unmarked box indicates that the factor was not discussed or was not emphasized in interviews with the principal and teachers.

During the implementation phase, principals in Schools B, C, and D initiated more techniques to enhance the use of developmentally appropriate practices than did the principal in School A. It was further noted that principals in Schools B, C, and D used nearly the same number of techniques to influence the use of developmentally appropriate practices.

Principals in Schools B and D showed an increase in number of techniques used from the implementation phase to the institutionalization phase. Principal B maintained 14 of the original 17 techniques and added four others. Principal D maintained 15 of the original 16 techniques and added three others. In contrast, Schools A and C showed a decrease in the number of techniques from the implementation phase to the institutionalization phase. Principal A maintained 6 of the original 12 techniques and added no new strategies. Principal C maintained 10 of the original 15 techniques and added two different strategies.

A direct relationship existed between the extent of use of developmentally appropriate practices in the classroom and the principal's sustained focus on maintaining and initiating enhancing strategies. Schools B and D revealed moderate and high use of developmentally appropriate practices and principals in these schools maintained a focus on strategies to enhance

these practices in the classrooms. Schools A and C revealed low and moderate use of developmentally appropriate practices and principals in these schools maintained fewer techniques.

According to the literature, the availability of materials impacted the extent to which new practices were maintained (Foley, 1993; Fullan, 1985, 1991). Although all principals provided furniture and supplies, several teachers in each school listed lack of materials as being an inhibiting factor.

The review of research revealed that for skills and knowledge to be maintained, on-going staff development (Foley, 1993; Shuster, 1995) or refresher trainings (Ford, 1994; Tallman & Holt, 1987) were necessary. All principals provided training and workshops during the implementation phase. Principals B, C, and D maintained a focus on developmentally appropriate practices and communicated this focus to the teaching staff. Teachers and the principal in School D shared that hands-on math and science workshops and teacher sharing sessions of successful strategies were beneficial in sustaining the use of manipulatives and centers. Principal A, on the other hand, reported that the focus of staff development had changed from use of manipulatives and learning centers to state testing and raising test scores. He reported that he had seen a decline in the use of manipulatives and centers and felt that they needed to refocus and have refresher trainings. These comments which indicated the need for and benefits of on-going staff development were congruent with the review of research on the theory for transfer of training.

Guidelines for principals of the NAESP (1990a, 1990b) recommended that principals have a background knowledge of child development and be able to explain, organize, and implement early childhood programs. Using this knowledge base, principals were expected to help teachers identify the difference between effective and ineffective approaches and to suggest alternative methods. Principal D continued to build a knowledge base by attending conferences and workshops and reading research. She then used this knowledge, along with the staff to evaluate programs and strategies before implementing them. Principal D was the only principal to emphasize reading and using research as part of the staff development program.

Espinosa (1992), Fullan (1991), and Laker (1990) suggested that a supportive organizational climate enhanced and maintained the use of new innovations. Gronlund (1995)

indicated that teachers needed time to experiment and to grow individually. Most teachers in the schools of this study confirmed that the principals provided a supportive and risk free environment. Teachers in Schools B, C, and D shared that they had a positive collegial relationship with peers and the principal and had been given time to grow at their own rate. Principals and teachers reported that as teachers experienced success or saw others being successful, they increased the use of appropriate practices. Teacher success and continued use of appropriate practices as reported by these teachers was congruent with the research on the theory of transfer.

Principal A reported that a concerted effort had not been made to implement developmentally appropriate practices on a large scale. Those who wanted to use the practices were encouraged to do so but no one was forced. In addition, several teachers in School A indicated that they did not know what other teachers did in their classrooms, reflecting a lack of opportunity to interact with peers. The review of studies on the theory of transfer revealed that use of innovations and strategies decreased when the vision was not clearly communicated (Fullan, 1991; Heller & Firestone, 1995) and when peer support and interaction did not exist (Laker, 1990). The declining practices in School A supported this aspect of the theory of transfer.

Principal management techniques did not differ much from implementation period to current practices. Three of the principals visited classrooms and provided feedback during the implementation phase and continued to do so during the current time period. According to teacher reports, feedback from Principals B and D enabled them to understand developmentally appropriate practices and to incorporate these practices into their teaching strategies. Heller and Firestone (1995) reported that principals who provided supportive feedback sustained the use of innovations after the implementation period. The behaviors of Principals B and D and the sustained use of developmentally appropriate practices in those schools were consistent with the theory of transfer of training.

Laker (1990) suggested that maintenance transfer was enhanced when there was little discrepancy between previous knowledge, beliefs, and experiences and the new training. The philosophy of developmentally appropriate practices was incongruent with traditional philosophies of early childhood, suggesting that transfer might be difficult.

The majority of teachers and all principals of this study had a philosophy of learning that was congruent to the basic concepts of developmentally appropriate practices. Initial attitudes of teachers toward change to developmentally appropriate practices in Schools A, B, and C were generally positive during the implementation phase and according to the principals had improved over time. Teacher behavior, however, did not always reflect these attitudes. The attitude of teachers in School D underwent the greatest change. According to the principal, many teachers feared and resisted the change but were positive after observing student reaction and success. School D demonstrated greater use of developmentally appropriate practices, especially in kindergarten and first grade.

All principals shared the goal to increase student reading test scores and to increase the use of developmentally appropriate practices. Principal A discussed the need to have refresher trainings for the entire staff. Although Principal C and the staff were satisfied with the practices in their school, they did see a need to build onto and expand existing practices. Principals B and D were more specific in their goals. Principal B desired to have 100% participation 100% of the time with use of developmentally appropriate practices. Principal D desired to increase the use of centers in third grade, maintain the use of computers as centers, and maintain developmentally appropriate practices in kindergarten. Most teacher goals related to improving teaching abilities. Teacher and principal goals, especially in Schools B and D, reflected a desire to improve and to increase the use of developmentally appropriate practices. These attitudes and behaviors represented a sustained focus on developmentally appropriate practices with the potential for further transfer.

The greatest enhancing factor as reported by principals and teachers was the reaction of students to the use of manipulatives, centers, and group work. When teachers saw that developmentally appropriate practices enabled children to learn and increased student enjoyment, teachers were willing to try again. Teachers reported that students enjoyed learning, learned more, and behaved more appropriately, especially when using centers. Teachers also felt that using learning centers enabled them to meet individual learning styles.

Other enhancing factors, as reported by the teachers in every school, included collegial peer support, supportive climate, and staff development. In addition, some academic programs

enhanced the use of developmentally appropriate practices. Principal D reported that state testing enhanced the use of manipulatives and that the state department curriculum framework allowed for creativity in meeting desired goals and promoted the use of developmentally appropriate practices. Principal D was the only principal to view state testing as a positive factor.

Principals reported that the greatest inhibiting factor during the implementation phase was the change process itself and the acceptance of noise as students worked in centers and small groups. The greatest inhibiting factor during the institutionalization period as reported by three principals was state testing and the emphasis on improving reading scores. According to Principal A, the emphasis on test scores had caused the district and teachers to emphasize practices that contradicted developmentally appropriate practices. Another inhibiting factor mentioned by teachers in all schools was time. This included time to plan and prepare lessons and centers, time to hand out manipulatives, time to work with individual students, and time to cover required curriculum material. Large class sizes, lack of materials, lack of funding, lack of space, and lack of parent involvement were also listed as inhibiting factors in most schools.

Findings

Three findings emerged relative to the extent to which developmentally appropriate practices had been institutionalized in schools that included grades K-3 of four principals who had participated in the DIP training during 1989 - 1993. First, all schools and all grade levels of this study demonstrated use of developmentally appropriate practices to some extent. Principals and teachers in this study accepted the philosophical tenets relative to the use of developmentally appropriate practices to enhance the learning experiences of children. Using this knowledge base, teachers and principals were able to initiate these practices to some extent in their schools, especially learning centers and manipulatives.

A second finding was that kindergarten classrooms in all schools demonstrated greater use of developmentally appropriate practices than grades 1, 2, and 3. The greater use of developmentally appropriate practices in kindergarten seemed to emanate from teacher and principal perceptions of appropriate activities for this grade level. Kindergarten teachers focused on the development of the whole child while teachers in grades 1, 2, and 3 seemed to focus on cognitive development. Kindergarten exhibited more use of learning centers, play, free choice, and

exploratory use of manipulatives, resulting in more opportunities for student-initiated learning experiences. Although teachers of grades 1, 2, and 3 were more task-oriented, skill-based, and teacher-directed, some teachers were beginning to integrate subject areas and use trade books to supplement existing programs and to provide opportunities for student participation.

The third finding was that schools in this study used developmentally appropriate practices at an overall moderate level. This moderate level of use of developmentally appropriate practices seemed to be a reflection of schools moving from teacher-directed and text-bound instruction to a more student-centered approach. An example was the transition from the use of learning centers as an enrichment activity to the use of learning centers as an instructional tool. There continued to be a need for teachers to control center activities which limited access to knowledge students could gain through student choice and self-exploration. Another factor which contributed to the overall moderate rating of the schools was the distribution of use of developmentally appropriate practices within grade levels. Each grade level in each school was represented by only a few classrooms. Therefore, high or low ratings by one teacher influenced the overall rating for that grade level which ultimately influenced the overall rating for the school.

There were three findings relative to the question of principal influence on the institutionalization of developmentally appropriate practices in grades K-3. The impact of principal influence was determined by analyzing the extent of use of developmentally appropriate practices in the classroom, the variety of techniques used by principals to promote the adoption of developmentally appropriate practices, and teacher statements regarding principal influence. In the findings, Schools B, C, and D were similar in relationship to all of these variables. School D was chosen as a representative of this group because it rated highest in use of developmentally appropriate practices, techniques applied by principals, and teacher support. In the analysis of principal influence, School D was compared to School A which demonstrated the lowest rating in these three categories.

The first finding was that a common core of 18 techniques were used by principals to influence the use of developmentally appropriate practices. Sixteen of these techniques were cited in the literature as being typical strategies used by principals to influence the use of a new innovation. They included (a) staff development, (b) provision of resources and materials, (c)

funding for materials and staff development, (d) presentation of developmentally appropriate topics at faculty meetings and at grade level meetings, (e) individual conferences, (f) encouragement of risk taking, (g) communication of a clear vision, (h) feedback, (i) principal classroom visits, (j) informal conversations, (k) visits to other schools, (l) teacher visitations of other classrooms within their school, (m) provision of a collegial atmosphere, (n) allowance for gradual change, and (o) joint planning. Two additional staff development strategies not specifically cited in the literature but used by at least three principals in this study included using teachers as presenters and as resource persons.

Principals seemed to rely heavily on those techniques generally used in educational leadership to implement and maintain any educational program or innovation. The strategies needed to implement developmentally appropriate practices were not different from strategies needed to implement other innovations and did not require principals to acquire additional school management strategies. Using familiar strategies enabled principals to implement developmentally appropriate practices in their schools.

The second finding was that a direct relationship was noted between the number of techniques used by a principal to enhance the use of developmentally appropriate practices and the use of these practices in the classroom. The extent of use of developmentally appropriate practices was compared to the techniques used by principals to influence the use of these practices. Principal A used the fewest techniques (14) while Principal D used the most techniques (28). Thirteen of the fourteen techniques used by Principal A were among the 18 common core techniques used by most principals. In comparison, Principal D used 17 of the 18 common core techniques plus 11 additional techniques. Although all schools fell into the moderate range, School A exhibited moderate and low use of developmentally appropriate practices and School D exhibited high and moderate use of developmentally appropriate practices.

The literature contained no reference to a relationship between the number of techniques utilized by a principal to implement and institutionalize developmentally appropriate practices and the extent to which these practices were used in the classroom. This finding suggested that principals using more techniques increased the extent of use of developmentally appropriate practices in the classroom. However, increased use of developmentally appropriate practices also

seemed to be contingent on the nature of the activities the principal chose. In addition to the common core of techniques identified above, Principal D expanded her own knowledge base, shared research with teachers, provided opportunities for peer interaction, and maintained a deliberate focus on developmentally appropriate practices and their relationship to student achievement.

The third finding was that teachers identified the principal as a key facilitator in the implementation and institutionalization of developmentally appropriate practices. This emerged from teacher interviews pertaining to their perception of factors that enhanced the use of developmentally appropriate practices in their classrooms. Forty-six percent (n = 24) of the teachers interviewed mentioned the principal as being a major contributing factor in the use of appropriate practices. Of the 11 teachers in School A, the school with the lowest use of developmentally appropriate practices, three (27%) stated that the principal had enabled them to adopt these practices in their classrooms. In comparison, nine (75%) of the twelve teachers in School D, the school with the highest use of developmentally appropriate practices, credited the principal as being a key enhancing factor. This data was gathered from responses to a general question requesting identification of factors that enabled teachers to use developmentally appropriate practices in their classrooms. The question contained no reference to principal influence.

No specific citations were found in the literature which indicated that teachers perceived the principal as a key enhancing factor in the implementation and institutionalization of developmentally appropriate practices. Principal D engaged in a variety of techniques which provided for a high level of face-to-face interaction with teachers and which focused on developmentally appropriate practices. Teachers in School D seemed to perceive these principal behaviors as instrumental in the implementation and sustained use of these practices.

There were two findings relative to transfer of training, especially factors that enhanced or inhibited the transfer of developmentally appropriate practices in grades K-3. The first finding was that a direct relationship existed between the extent to which principals maintained techniques that enhanced the use of developmentally appropriate practices and the extent to which these practices were used in the classroom. All principals used some practices that enhanced the

institutionalization of developmentally appropriate practices. Principal A implemented 12 techniques and had maintained six of these at the time of this study and as noted, School A had a low to moderate rating in the use of developmentally appropriate practices. In contrast, Principal D implemented 16 techniques, maintained all but one of these, and added three additional techniques. School D had a moderate to high rating in the use of developmentally appropriate practices. Schools B and C were in the moderate range of use of developmentally appropriate practices. Principal B implemented 17 techniques, maintained 14 of these, and added four additional strategies. Principal C implemented 15 techniques, maintained 10 of these, and added two additional strategies. Maintenance of principal techniques to enhance the use of developmentally appropriate practices appeared to be critical in the institutionalization of these practices. Principal techniques associated with remaining current in knowledge and skills relative to developmentally appropriate practices seemed to be critical to the long term transfer of these practices. Principals who provided on-going staff development, reinforcement, and other indications of visible commitment generated a collegial environment in which teachers were encouraged to use developmentally appropriate practices. It also seemed that schools that maintained a focus on developmentally appropriate practices perceived these practices as contributing to their overall academic success.

The second finding was that the attitudes and beliefs of the classroom teacher were key elements to transfer of training. Teachers who developed belief systems that were congruent with the basic concepts of developmentally appropriate practices seemed to be willing to adapt their teaching methods to include these practices in their daily routines. Many teachers in this study had attitudes and beliefs that were congruent with developmentally appropriate practices. Eighty to eighty-four percent of the teachers in Schools B, C, and D had a philosophy and beliefs similar to the basic concepts of developmentally appropriate practices. In School A, only 73% of the teachers had a philosophy that was congruent with developmentally appropriate practices. Schools B, C, and D exhibited greater use of appropriate practices than did School A. When belief systems were reinforced by principal support, long term transfer of developmentally appropriate practices seemed to occur. This sustained use of these practices contributed to

improved student attitudes, behavior, and academic achievement which in turn stimulated further use of the practices by teachers.

Implications

The first implication of this study is that the DIP training appeared to meet the objectives for which it was designed — to promote the use of developmentally appropriate practices in grades K-3. This is supported in the findings of this study which indicated use of developmentally appropriate practices to a moderate extent in all schools in this study. Factors such as passage of time, individual personalities of principals and teachers, and other staff development trainings may have influenced the use of developmentally appropriate practices in these schools. Therefore, one cannot assume that a direct causal relationship exists between the DIP training and current use of developmentally appropriate practices in grades K-3. Based on principal interviews, it appears that the DIP training served as a catalyst for implementation of these practices in the four schools of this study. Principals indicated that the DIP training provided a new look at primary education and validated practices that were already in use.

Most principals in this study are continuing to promote developmentally appropriate practices presented in the DIP training. The same practices emphasized in the DIP training, such as learning centers, use of manipulatives, small group instruction, peer interaction, and thematic units are being used in classrooms. While developmentally appropriate practices may have emerged without the DIP training, this training seems to have expedited the use of these practices in classrooms in this study.

The second implication of this study is that developmentally appropriate practices are not self-perpetuating. The introduction of developmentally appropriate practices does not insure continuation beyond the implementation phase. True institutionalization of developmentally appropriate practices requires a sustained focus on these practices and a supportive environment to allow for continued growth. Findings of this study indicate that developmentally appropriate practices are being used in kindergartens and to a lesser extent in grades 1, 2, and 3. On a continuum from a heavily teacher-directed ideology to a student-centered approach, schools in this study are mid-range. From this point these schools can continue to grow and expand the use of developmentally appropriate practices, maintain existing practices, or revert to more teacher-

directed instruction. Growth oriented schools will be those in which the principals maintain a current knowledge base relative to developmentally appropriate practices and influence classroom activities through accurate assessment and constructive feedback.

The third implication of this study is that principals influence the extent of use of developmentally appropriate practices in grades K-3. Sustaining a focus on developmentally appropriate practices through on-going staff development techniques enables principals to create an atmosphere in which they and the teachers develop a shared vision for the school and create linkages between school goals and the concepts of these practices. In addition, principals who have a well-grounded knowledge base are able to provide accurate information, assess teacher practices, and provide feedback to enhance appropriate use of these practices. These combined elements foster an environment in which the use of developmentally appropriate practices becomes a natural part of the daily routine.

The fourth implication of the study is that institutionalization of developmentally appropriate practices requires participation by both principals and teachers. The promotion of developmentally appropriate practices does not require principals to alter their management techniques, but rather to sustain a focus on these practices. Principals can be influential in communicating a vision, in providing opportunities to acquire knowledge and skills, and in providing a supportive environment. Ultimately, teachers must implement these practices in their classrooms. Teachers who have attitudes and beliefs that are congruent with the tenets of developmentally appropriate practices play a key role in sustaining the vision and in encouraging others to use these practices. Regardless of their philosophy, teachers are more willing to try innovative approaches in environments that support and nurture collegiality, open communication, and mutual trust.

In order for the institutionalization of developmentally appropriate practices to occur, a symbiotic relationship between teachers and principals must exist. Just as teachers seek validation and support for risk taking in the classroom, principals also seek support and feedback for innovations they bring into the school. The likelihood of the institutionalization of developmentally appropriate practices is remote without the active collaboration between teachers and principals.

Recommendations for Practice

One recommendation is made regarding the continued professional growth of principals. Based on the review of literature and findings of this study, efforts should be made to provide principals with refresher training in the use of developmentally appropriate practices especially as they relate to grades 1, 2, and 3. Provision of such training would enable principals to maintain a current knowledge base and would offer a mechanism to sustain a focus on the importance of using these practices. Training should include methods principals can employ to encourage the use of these practices in grades 1, 2, and 3 and strategies principals can use to accurately assess the use of developmentally appropriate practices.

Four recommendations are made regarding the continued professional growth of teachers. Literature supports the use of on-going staff development as a means to maintain any teaching strategy or technique. First, principals should provide teachers with opportunities for refresher training to insure that developmentally appropriate practices that are used in the classroom meet the criteria as established in the DIP guidelines. Second, principals should continue to provide opportunities for teachers to attend out-of-district conferences and workshops on early childhood education. Although in-house staff development programs, such as mentoring, peer sharing, and teacher presentations are desirable and recommended, attendance at out-of-district workshops enables teachers to keep abreast of current research and early childhood teaching strategies. In addition, out-of-district conferences and workshops, provide standards upon which teachers can assess the quality of use of developmentally appropriate practices in their classrooms. Third, principals should empower teachers by involving them in planning staff development programs that relate to the use of developmentally appropriate practices.

Literature reveals the importance of teacher attitudes and beliefs in implementing and maintaining teaching techniques or strategies. The principal should provide opportunities for peer sharing. Peer sharing sessions provide recognition and positive feedback to teachers who are using developmentally appropriate practices correctly, provide others with ideas and strategies, and sustain a focus on the importance of using these practices.

Two recommendations are made regarding the linkage of developmentally appropriate practices to school policy. First, principals and teachers need to have a shared vision that

developmentally appropriate practices will improve the teaching and learning of children and that these practices should be part of district policy and curriculum. Therefore, principals and teachers should make a concerted effort to revise curricula to include these practices. Revised curricula that includes thematic units, integrated subject matter, learning centers, and use of manipulatives will sustain a focus on and communicate the importance of the use of these practices. Second, literature indicated the importance of hiring practices in maintaining quality school programs. Therefore, principals should revise job descriptions and hire quality personnel who are trained in the use of developmentally appropriate practices.

Recommendations for Future Research

The following questions emerged from this study as topics for future research. What differences exist between kindergarten and grades 1, 2, and 3 that influence the use of developmentally appropriate practices? How does actual use of developmentally appropriate practices compare to teacher and principal perceived use of these practices? Principals in this study perceived themselves as instructional leaders, facilitators, or change agents. To what extent do these perceptions influence the institutionalization of developmentally appropriate practices? Which techniques used by principals to influence the use of developmentally appropriate practices are the most effective? Is the use of developmentally appropriate practices influenced more by teacher belief systems or by principal behavior? To what extent do student behaviors influence the institutionalization of developmentally appropriate practices? To what extent does length of teaching experience influence the acceptance and use of developmentally appropriate practices?

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